

Status and development of the Community Radiative Transfer Model (CRTM)

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The Community Radiative Transfer Model (CRTM) is a fast, 1-D radiative transfer model designed to simulate top-of-the-atmosphere radiances consistent with a wide variety of satellite-based sensors [1]. The CRTM was primarily developed by JCSDA-funded scientists with essential contributions from NOAA/STAR and NOAA/EMC scientists. The primary goal of CRTM is to provide fast, accurate satellite radiance simulations and associated Jacobian calculations under all weather and surface conditions. CRTM supports all current operational and many research passive sensors, covering wavelengths ranging from the visible through the microwave. The model has undergone substantial improvement and expansion, since the first version in 2004. The CRTM has been used in the NOAA/NCEP and U.S. Navy operational data assimilation systems and by many other JCSDA partners such as NOAA/NESDIS/STAR, NOAA/OAR, NASA/GMAO, Naval Research Laboratory, Air Force Weather, and within multiple university environments. Over the past 14 years, both external research groups and operational centers alike have made essential contributions to the continued development and growth of CRTM.

A major goal of the CRTM core team is to ensure that CRTM becomes a true community radiative transfer model for all users. The CRTM official baseline code is developed and maintained based on internal and community-wide inputs, consisting of both improvements and externally contributed codes.

This presentation will briefly review the scientific and technical basis of CRTM, including its many strengths and limitations. There will also be an overview of the current status of the recently released CRTM version 2.3.0; and the future planned release of CRTM version 3.0.0 – which will represent a major milestone in CRTM's development and capabilities.

References

[1] https://www.jcsda.noaa.gov/projects_crtm.php (accessed on 12/22/2017).

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